WHAT IS CLAIMED IS:

1. A computer-readable medium having thereon computer-executable instructions for maintaining functional availability in a power-constrained personal computer over extended periods of time comprising:

configuring a first timer to generate an up alarm signal;

reconfiguring the power-constrained personal computer from a first of a set of relatively high functionality and high power configurations to one of a set of relatively low functionality and low power configurations; and

in response to the up alarm signal, reconfiguring the power-constrained personal computer from said one of the set of relatively low functionality and low power configurations to a second of the set of relatively high functionality and high power configurations.

2. The computer-readable medium of claim 1, wherein the first of the set of relatively high functionality and high power configurations and the second of the set of relatively high functionality and high power configurations are a same power-constrained personal computer configuration.

3. The computer-readable medium of claim 1, wherein:

the computer-executable instructions further comprise configuring a second timer to generate a down alarm signal; and

the reconfiguration of the power-constrained personal computer from the first of the set of relatively high functionality and high power configurations to said one of the set of relatively low functionality and low power configurations occurs in response to the down alarm signal.

4. The computer-readable medium of claim 3, wherein the first timer and the second timer are a same timer.

5. The computer-readable medium of claim 1, wherein:

each power-constrained personal computer configuration is associated with at least one hardware power set;

each hardware power set references at least one hardware component of the power-constrained personal computer; and

reconfiguring the power-constrained personal computer from said one of the set of relatively low functionality and low power configurations to the second of the set of relatively high functionality and high power configurations comprises supplying power to at least said at least one hardware component referenced by said at least one hardware power set associated with the second of the set of relatively high functionality and high power configurations.

6. The computer-readable medium of claim 1, wherein:

each power-constrained personal computer configuration is associated with at least one hardware power set;

each hardware power set references at least one hardware component of the power-constrained personal computer; and

reconfiguring the power-constrained personal computer from the first of the set of relatively high functionality and high power configurations to said one of the set of relatively low functionality and low power configurations comprises removing power from said at least one hardware component referenced by said at least one hardware power set associated with the first of the set of relatively high functionality and high power configurations except where doing so would also remove power

from said at least one hardware component referenced by said at least one hardware power set associated with said one of the set of relatively low functionality and low power configurations.

7. The computer-readable medium of claim 1, wherein:

each power-constrained personal computer configuration is associated with at least one software power set;

each software power set references at least one software component of the power-constrained personal computer;

the power-constrained personal computer includes a plurality of storage types for software components;

at least one of the plurality of storage types is capable of being powered down while other storage types remain powered; and

reconfiguring the power-constrained personal computer from said one of the set of relatively low functionality and low power configurations to the second of the set of relatively high functionality and high power configurations comprises loading, from a newly powered storage type, at least said at least one software component referenced by said at least one software power set associated with the second of the set of relatively high functionality and high power configurations.

8. The computer-readable medium of claim 7, wherein reconfiguring the power-constrained personal computer from said one of the set of relatively low functionality and low power configurations to the second of the set of relatively high functionality and high power configurations further comprises loading, from the newly powered storage type, at least said at least one software component referenced by said at least one

software power set associated with power-constrained personal computer configurations in which the newly powered storage type is powered down.

9. The computer-readable medium of claim 1, wherein:

each power-constrained personal computer configuration is associated with at least one software power set;

each software power set references at least one software component of the power-constrained personal computer;

the power-constrained personal computer includes a plurality of storage types for software components;

at least one of the plurality of storage types is capable of being powered down while other storage types remain powered;

the power-constrained personal computer includes a caching mechanism for transferring software components between scarce and plentiful storage types; and

the computer-executable instructions further comprise configuring the caching mechanism to transfer software components referenced by software power sets associated with each power-constrained personal computer configuration to at least one storage type that remains powered in the power-constrained personal computer configuration.

10. The computer-readable medium of claim 1, wherein reconfiguring the power-constrained personal computer from at least one of the set of relatively low functionality and low power configurations to at least one of the set of relatively high functionality and high power configurations results in an increase in performance of the power-constrained personal computer.

11. The computer-readable medium of claim 1, wherein the up timer is clocked by a real-time clock.

12. The computer-readable medium of claim 1, wherein the up alarm signal is scheduled in accordance with an intermittent computing schedule.

13. The computer-readable medium of claim 1, wherein the power-constrained personal computer includes a hard drive.

14. The computer-readable medium of claim 1, wherein the power-constrained personal computer includes an Industry Standard Architecture (ISA) compatible system bus.

15. A computer-readable medium having thereon computer-executable instructions for performing a method comprising:

transitioning a power-constrained personal computer to an intermittent computing system state;

while in the intermittent computing system state, transitioning between sub-states of the intermittent computing system state according to an intermittent computing schedule; and

in each sub-state of the intermittent computing system state, configuring the power-constrained personal computer such that an amount of power consumed by the power-constrained personal computer is altered.

16. The computer-readable medium of claim 15, wherein:

the intermittent computing system state has a low power system sub-state and a high power system sub-state; and

the intermittent computing schedule comprises cycling between the low power system sub-state and the high power system sub-state at a specified power cycle rate.

17. The computer-readable medium of claim 16, wherein the intermittent computing schedule further comprises residing in the high power system sub-state for a specified wake time.

18. The computer-readable medium of claim 15, wherein:

the intermittent computing system state has a low power system sub-state and a high power system sub-state; and

the intermittent computing schedule comprises cycling between the low power system sub-state and the high power system sub-state, repeatedly residing in the low power system sub-state for a specified sleep time and in the high power system sub-state for a specified wake time.

19. The computer-readable medium of claim 15, wherein:

the intermittent computing system state has a low power system sub-state and a high power system sub-state; and

the intermittent computing schedule comprises cycling between the low power system sub-state and the high power system sub-state at a power cycle rate, the power cycle rate determined by a specified power cycle rate function with a power cycle rate control parameter.

20. The computer-readable medium of claim 15, wherein the intermittent computing schedule comprises:

an ordered list of sub-states of the intermittent computing system state; and

for each sub-state of the intermittent computing system state in the ordered list, a duration to reside in the sub-state of the intermittent computing system state.

21. The computer-readable medium of claim 15, wherein:

the intermittent computing system state has a low power system sub-state and a high power system sub-state;

the power-constrained personal computer has at least one sleeping system state;

the power-constrained personal computer has a sleeping system state configuration for each sleeping system state; and

the low power system sub-state is associated with the sleeping system state configuration of one of said at least one sleeping system state.

22. The computer-readable medium of claim 15, wherein:

the intermittent computing system state has a low power system sub-state and a high power system sub-state;

the power-constrained personal computer has at least one working system state;

the power-constrained personal computer has a working system state configuration for each working system state; and

the high power system sub-state is associated with the working system state configuration of one of said at least one working system state.

23. The computer-readable medium of claim 15, wherein:

each sub-state of the intermittent computing system state is associated with at least one hardware power set;

each hardware power set references at least one hardware component of the power-constrained personal computer; and

configuring the power-constrained personal computer such that the amount of power consumed by the power-constrained personal computer is altered comprises altering a supply of power to at least one of said at least one hardware component referenced by said at least one hardware power set of the sub-state of the intermittent computing system state.

24. The computer-readable medium of claim 15, wherein transitioning between sub-states of the intermittent computing system state according to the intermittent computing schedule comprises configuring at least one timer to generate alarm signals in accordance with the intermittent computing schedule.

25. A power-constrained personal computer, comprising an intermittent computing module, the intermittent computing module comprising a power cycle engine configured to, at least:

transition the power-constrained personal computer to an intermittent computing system state;

transition the power-constrained personal computer between sub-states of the intermittent computing system state according to an intermittent computing schedule; and

alter a level of power consumed by the power-constrained personal computer in each sub-state of the intermittent computing system state.

26. The power-constrained personal computer of claim 25, wherein:

the intermittent computing system state has a lower power system sub-state and a higher power system sub-state; and

the intermittent computing schedule comprises cycling between the lower power system sub-state and the higher power system sub-state at a power cycle rate.

27. The power-constrained personal computer of claim 25, wherein the intermittent computing schedule comprises:

an ordered list of sub-states of the intermittent computing system state; and

for each sub-state of the intermittent computing system state in the ordered list, a duration to reside in the sub-state of the intermittent computing system state.

28. The power-constrained personal computer of claim 25, wherein the intermittent computing module further comprises a power cycle event publisher configured to, at least, publish a set of power cycle events, the set of power cycle events comprising an entering intermittent computing sub-state event.

29. The power-constrained personal computer of claim 25, wherein:

the intermittent computing module further comprises a power set database containing at least one hardware power set;

each sub-state of the intermittent computing system state is associated with at least one of said at least one hardware power set;

each hardware power set references at least one hardware component of the power-constrained personal computer; and

altering the level of power consumed by the power-constrained personal computer in each sub-state of the intermittent computing system state comprises altering a supply of power to at least one of said at least one hardware

component referenced by said at least one hardware power set associated with the sub-state of the intermittent computing system state.

30. The power-constrained personal computer of claim 25, wherein the intermittent computing module further comprises an application programming interface, the application programming interface comprising:

an Enter Intermittent Computing State element capable of triggering the transition of the power-constrained personal computer to the intermittent computing system state; and

a Get/Set Intermittent Computing Schedule element capable of configuring the intermittent computing schedule.

31. The power-constrained personal computer of claim 30, wherein:

each sub-state of the intermittent computing system state is associated with at least one hardware power set;

each hardware power set references at least one hardware component of the power-constrained personal computer; and

the application programming interface further comprises an Edit Power Set element enabling the configuration of said at least one hardware power set.

32. The power-constrained personal computer of claim 25, wherein the power-constrained personal computer includes a hard drive.

33. The power-constrained personal computer of claim 25, wherein the power-constrained personal computer includes an Industry Standard Architecture (ISA) compatible system bus.

34. A computer-readable medium having thereon computer-executable instructions for interacting with at least one element of an application programming interface of an intermittent computing module, the application programming interface of the intermittent computing module comprising:

an Enter Intermittent Computing State element capable of transitioning a power-constrained personal computer to an intermittent computing system state having sub-states that transition according to an intermittent computing schedule; and

a Get/Set Intermittent Computing Schedule element capable of configuring the intermittent computing schedule.

35. The computer-readable medium of claim 34, wherein:

the intermittent computing system state has a low power system sub-state and a high power system sub-state; and

the Get/Set Intermittent Computing Schedule element comprises a first interface specification including a first parameter indicating a power cycle rate at which to cycle between the low power system sub-state and the high power system sub-state.

36. The computer-readable medium of claim 35, wherein the first interface specification further includes a second parameter indicating a wake time to reside in the high power system sub-state.

37. The computer-readable medium of claim 35, wherein:

the Get/Set Intermittent Computing Schedule element further comprises a second interface specification including:

a first parameter indicating a power cycle rate function; and

a second parameter indicating a power cycle rate control parameter; and

a power cycle rate at which to cycle between the low power system sub-state and the high power system sub-state is determined by a transformation of the power cycle rate control parameter by the power cycle rate function.

38. The computer-readable medium of claim 34, wherein the Get/Set Intermittent Computing Schedule element comprises an interface specification including a parameter indicating the intermittent computing schedule, the intermittent computing schedule comprising:

an ordered list of sub-states of the intermittent computing system state; and

for each sub-state of the intermittent computing system state in the ordered list, a duration to reside in the sub-state of the intermittent computing system state.

39. The computer-readable medium of claim 34, wherein:

each sub-state of the intermittent computing system state is associated with at least one hardware power set;

each hardware power set references at least one hardware component of the power-constrained personal computer; and

the application programming interface of the intermittent computing module further comprises an Edit Power Set element enabling the configuration of said at least one hardware power set.

40. The computer-readable medium of claim 34, wherein:

each sub-state of the intermittent computing system state is associated with at least one software power set;

each software power set references at least one software component of the power-constrained personal computer; and

the application programming interface of the intermittent computing module further comprises an Edit Power Set element enabling the configuration of said at least one software power set.

41. The computer-readable medium of claim 34, wherein the application programming interface of the intermittent computing module further comprises a Subscribe to Cycle Event element enabling subscription to a set of power cycle events, the set of power cycle events comprising an entering intermittent computing sub-state event.

42. The computer-readable medium of claim 34, wherein the application programming interface of the intermittent computing module further comprises a Be Awake At element enabling specification of at least one time period and, for each time period, at least one of the sub-states of the intermittent computing system state to reside in during the time period.